
From neural development to cognition: unexpected roles for chromatin.

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Authors: Jehnna L Ronan, Wei Wu, Gerald R Crabtree

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Public Summary:

This work reviews the contribution of chromatin regulation to human neurologic diseases including mental retardation, ALS, schizophrenia, autism and depression.

Scientific Abstract:

Recent genome-sequencing studies in human neurodevelopmental and psychiatric disorders have uncovered mutations in many chromatin regulators. These human genetic studies, along with studies in model organisms, are providing insight into chromatin regulatory mechanisms in neural development and how alterations to these mechanisms can cause cognitive deficits, such as intellectual disability. We discuss several implicated chromatin regulators, including BAF (also known as SWI/SNF) and CHD8 chromatin remodellers, HDAC4 and the Polycomb component EZH2. Interestingly, mutations in EZH2 and certain BAF complex components have roles in both neurodevelopmental disorders and cancer, and overlapping point mutations are suggesting functionally important residues and domains. We speculate on the contribution of these similar mutations to disparate disorders.

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